

Sea Turtles

INTRODUCTION

Sea turtles are highly migratory and found throughout the world's oceans. Six species are found in the United States: loggerhead, Kemp's ridley, green, leatherback, hawksbill, and olive ridley turtles. On the west coast, the green turtle and hawksbill are most abundant in Hawaiian waters; while the loggerhead, leatherback, and olive ridley turtles are most commonly reported along the continental Pacific coast. All five species are also found in the Atlantic Ocean, but the olive ridley rarely enters U.S. waters.

All six species of sea turtles found in the U.S. (8 species worldwide) are currently listed either as endangered or threatened under the ESA. The Kemp's ridley, hawksbill, and leatherback are listed as endangered throughout their ranges. The loggerhead and olive ridley are listed as threatened, as is the green turtle, except the Florida nesting population which is listed as endangered. The authority to protect and conserve sea turtles in the marine environment is vested to NOAA Fisheries, while the U.S. Fish and Wildlife Service maintains authority for sea turtles on land.

SPECIES AND STATUS

Atlantic Region

Historical data on sea turtle numbers are limited. In addition, the length of time that data have been collected has been short when compared with the long life and low reproductive rate of all turtle species. The estimated number of female loggerheads nesting annually in the southeastern United States is about 20,000-28,000. Most nest along Florida's east coast where nest numbers have been stable for 5 years (Fig. 25-1). Loggerhead turtles nesting has not shown any decline over the past 18 years. Only about 700-800 female Kemp's ridley turtles nest annually along a limited portion of Mexico's Gulf coast (Fig. 25-1). In 1947, on a single day, 40,000 females were seen nesting on one beach alone. This dramatic decline in the Kemp's ridley is probably indicative of similar population trends for other sea turtles, though

the magnitude and period of their declines may be different.

Historically, green turtles were taken for commercial use along the Florida and Texas coasts. Currently, 400-500 green turtles nest annually along the Florida coast. Under protection, green and Kemp's ridley turtles in the Gulf of Mexico may have begun increasing. There is no historical estimate of the numbers of hawksbill or leatherback turtles nesting on U.S. Caribbean beaches. The hawksbill has been heavily exploited, and continued trade of products from this species suggests that further declines are possible. The abundance trend of the leatherback turtle in U.S. waters is unknown.

Pacific Region

Although there is one record of the olive ridley turtle nesting in Hawaii, most reproduc-

Table 25-1.

Sea Turtles

| Area / Species | Historic Level | Current Level ¹ | Trend | Status in U.S. |
|------------------------|----------------|------------------------------|-------------------------|------------------|
| Atlantic Region | | | | |
| Loggerhead | Unknown | 20,000 - 28,000 ² | Stable ⁶ | T ³ |
| Green | Unknown | 400-500 ² | Increasing | T,E ⁴ |
| Kemp's ridley | 40,000 | 700-800 ⁵ | Stable ⁶ | E |
| Leatherback | Unknown | Unknown | Unknown | E |
| Hawksbill | Unknown | Unknown | Declining | E |
| Pacific Region | | | | |
| Loggerhead | Unknown | Unknown | Declining | E |
| Green | 10,000 | 500 ⁷ | Increasing ⁸ | T |
| Olive ridley | Unknown | Unknown | Unknown | T |
| Leatherback | Unknown | Unknown | Unknown | E |
| Hawksbill | Unknown | >75 ⁹ | Unknown | E |

¹ Estimates of sea turtle abundance as indicated by number of female sea turtles nesting on U.S. beaches.

² Using 2.5 nests per female.

³ Listed as threatened under the Endangered Species Act.

⁴ Listed as endangered in Florida; threatened in the U.S. Atlantic and Pacific.

⁵ Using 1.5 nests per female. Kemp's ridley turtles nest only on one Mexican beach.

⁶ Stable, but critically low.

⁷ Historical level for Hawaii only. Estimated 1995 total adult female population is 1,500 in Hawaii; 100-300 in American Samoa; current level in Guam is unknown.

⁸ Trend in Hawaii only, monitored at French Frigate Shoals; however, great concern exists over increasing frequency of fibropapilloma disease in all Hawaiian green turtles.

⁹ Estimated total adult population in Hawaii; average number of female hawksbills nesting annually in Hawaii is about 15. Current abundance in Guam and American Samoa is unknown.

tive colonies are in continental coastal areas and olive ridleys are nearly unknown around the western Pacific islands. The loggerhead turtle has been recorded, but uncommon, from the Mariana Islands, Samoa, and Hawaii. The species is primarily associated with continents and boundary currents rather than islands. Loggerheads do not nest in the western Pacific region. The leatherback turtle is a pelagic species that probably occurs near all U.S. Pacific islands, although nesting in none except the Solomon Islands and Irian Jaya. The hawksbill turtle is present at all western Pacific U.S. islands. About 75 adult hawksbills were estimated to be present in Hawaii in 1993, with only 15 nesting females. The number of hawksbills present in Samoa and Guam is unknown but nesting has been observed at Rose Atoll and the Manua Islands.

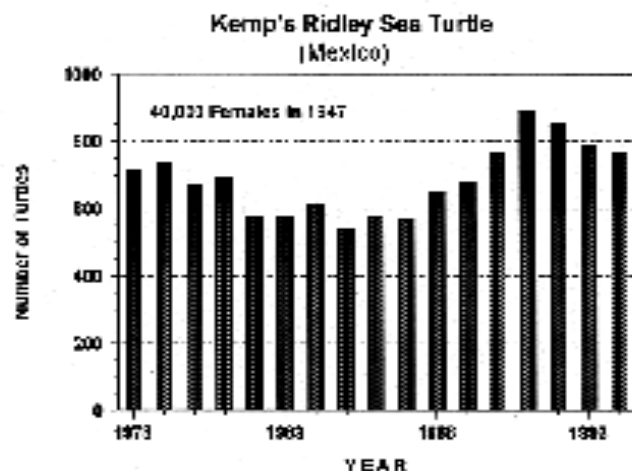


Fig. 25-1 Number of nesting Kemp's ridley sea turtles.

The status of leatherback, hawksbill, and loggerhead turtles throughout the Pacific is unknown, but mortality of leatherbacks from fishery bycatch and continued exploitation of hawksbills for their shells in areas outside of the United States makes them a special conservation concern.

The green turtle is the most abundant turtle in the western Pacific region. It is probably present at all U.S. islands. The historic level of its population was estimated to have been about 10,000. In 1995 about 1,500 adult females were estimated to exist in Hawaii, with about 500 nesting during the year at French Frigate Shoals in the NWHI, where >90% of the nesting in

Hawaii occurs. An additional 100-300 green turtles were estimated to be in American Samoa, nesting primarily at Rose Atoll. The numbers at Guam were unknown, with only sporadic nesting recorded. The population at French Frigate Shoals is thought to be increasing.

ISSUES

Bycatch and Fisheries Interactions

Sea turtles are threatened by multiple factors, most of which are human-related. A principal concern is incidental capture in commercial fisheries. Trawls, longline, and gillnet fisheries pose the greatest threats. Prior to the implementation of Turtle Excluder Device (TED) regulations, the National Academy of Science estimated that a maximum of 44,000 turtles, mostly loggerheads and Kemp's ridleys, were killed annually in the Gulf of Mexico and southeast U.S. Atlantic shrimp fishery. While TED use is mandated for the shrimp fishery and most of the summer flounder trawl fishery, recent mortality events indicate that significant mortality is still occurring in some areas as a result of these trawl fisheries. Turtles are also taken and killed in pelagic longline and gillnet fisheries. Of particular concern are the gillnet fisheries for coastal species, including sharks.

Propeller strikes and vessel collisions also pose significant threats to some sea turtles, especially in areas of high human population, where recreational boat traffic is heavy and coastal ports are active.

Habitat Concerns

Coastal development can reduce nesting, egg incubation, and foraging habitats for sea turtles. Rookeries of the southeastern U.S. are essential to the recovery and survival of sea turtles. Many nesting beaches have already been significantly degraded or destroyed. Nesting habitat is threatened by rigid shoreline protection or "coastal armoring" such as sea walls and sandbag installations. Additionally, nesting habitat is negatively impacted by beach nourishment projects that are improperly timed to occur during the nesting season or that use poor quality fill material. Artificial beach-front lighting, increased human activity, and beach driving also threaten species recovery. Thus, conservation and long-term protection of sea turtle nesting habitat are high management priorities.

Marine Debris

Ingestion of some marine debris can be a serious threat to wildlife. Sea turtles mistake clear plastic bags for jellyfish, one of their favorite meals. Floating tar balls and plastics are occasionally eaten. Ingested debris damages the digestive tract, causes starvation by blocking food, may be toxic, and in general is a serious source of mortality to the animals.

Disease

A disease, known as green turtle fibropapilloma (GTFP), is affecting a significant number of green turtles, most notably in Florida and Hawaii. The tumors from GTFP infection, which occur primarily on the skin and eyes, can be fatal. The cause of the disease remains unknown. In 1991, 31% of Kaneohe Bay's green turtles in Hawaii were afflicted and in 1989-90, 77-85% of the stranded turtles on Maui had fibropapillomas. Research to determine the cause of this disease is a high priority because the Hawaiian population was among the few increasing stocks prior to the disease's increase.

PROGRESS

Substantial progress has been made to eliminate incidental capture of sea turtles in the high seas driftnet fisheries in the open ocean. A United Nations-sponsored moratorium on large-scale driftnet fishing went into effect on 1 January 1993 which eliminated high seas driftnet fishing in the Pacific. The United States played a key role in passing the moratorium.

In the Hawaii pelagic longline fishery for tuna and swordfish, the incidental catch of turtles is being closely monitored through a compulsory logbook program established in November 1990. A mandatory scientific observer program was also implemented in February 1994, to collect more detailed data required to verify logbook reports, derive accurate estimates of turtle take rates and assess turtle mortality. During 1993, a workshop was held to formulate research techniques to determine hooking and entanglement mortality of turtles incidentally caught by longline. Another workshop was held in 1995 to identify ways to reduce or mitigate the impacts of incidental capture and handling of turtles during longline retrieval.

Significant progress is also being made in the monitoring of Hawaiian green turtles. In 1992, a 5-year series of saturation surveys was completed at East Island, French Frigate Shoals, the principal location of Hawaiian green turtle nesting, by NOAA Fisheries and the USFWS. Based on these surveys, rigorous quantitative methods have been developed for annual nesting surveys at East Island. Progress is also being made in monitoring juvenile and subadult Hawaiian green turtles in their nearshore habitat. A vigorous research program is underway to study the origins and effects of fibropapilloma tumor disease in the Hawaiian green turtle population; progress has been made in developing information relevant to potential etiologies involving cardiovascular parasites, viruses, and environmental pollutants. A similar disease situation exists among green turtles in Florida and the Caribbean.

Two joint NOAA Fisheries/USFWS sea turtle recovery plans, one for the U.S. Pacific and the other for the U.S. Atlantic, have been developed. These plans prioritize turtle research requirements and delineate reasonable actions which are believed to be required to recover and/or protect the species.

A major factor affecting the recovery of turtle populations is the mitigation of commercial fishing-sea turtle interactions. The incidental capture of sea turtles in various commercial fisheries has been studied and summarized and was the focal point of a meeting at the recent 13th Annual Sea Turtle Symposium. Recent legislation has allowed NOAA Fisheries to use observers in selected fisheries to document the occurrence of incidental turtle captures. Also, several new TED models have been recently tested and approved for commercial use, and research continues on the development of a new TED design which would accommodate small inshore turtles.

Considerable progress has been made on inshore juvenile habitat research and remote sensing. NOAA research projects have been started on juvenile ridleys and greens in the Cedar Keys and Biscayne Bay, Florida, and in the northwestern Gulf of Mexico. Additionally, a comprehensive research project concerning the incidence, etiology, and epidemiology of fibropapilloma tumor disease in Atlantic green turtles has been started. Concern is growing that this disease may seriously affect the recovery of world-wide green turtle populations. □